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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HANNAHER, CONSTANTINE

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/568,949	Applicant(s) COLE, BRYAN E.	
	Examiner Constantine Hannaher	Art Unit 2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20060222, 20060313</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 19 objected to because of the following informalities: only “a third region” is established by claim 18. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 22 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 22 provides for the use of an apparatus, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 25 recites “the angular range to be expected by Snell’s law for radiation to be reflected” but since Snell’s Law is one of refraction, not reflection, of radiation upon passage between regions of different refractive index, no such range of expectation can be established. Accordingly, the limitation which might be imposed on the positioning of the detector is not defined.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claim 22 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-5, 14, 16-21, and 25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Cheo (US004197457A).

With respect to independent claim 1, Cheo discloses a method of investigating a sample **12** corresponding to the illustrated apparatus **10** (FIG. 1) which would comprise the steps of irradiating the sample with radiation **20** having at least one frequency in the recited range (column 3, lines 64-65) and detecting radiation that is scattered by the sample **12** using a detector **43** positioned relative to the sample so as to “reduce” detection of specular radiation (column 5, lines 12-16).

With respect to dependent claim 2, the method of Cheo further comprises the step of analyzing the detected radiation to determine a characteristic (presence of defect **36**) of the sample.

With respect to dependent claim 3, the radiation detected in the method of Cheo is substantially non-specular reflection (column 5, lines 17-25).

With respect to dependent claim 4, the radiation detected in the method of Cheo is backscattered radiation (column 6, lines 21-28).

With respect to dependent claim 5, the method of Cheo further comprises the step of positioning the sample **12** so as to direct specular reflection away from one or more detectors **42, 43** detecting the non-specular radiation (in view of the vertical inclination).

With respect to dependent claim 14, the method of Cheo further comprises the step of positioning the sample **12** so that specular reflection is directed back towards an emitter **18** configured to irradiate the sample (FIG. 1).

With respect to independent claim 16, Cheo discloses an apparatus **10** for investigating a sample **12** (FIG. 1) comprising an emitter **18** for irradiating the sample with radiation **20** having at least one frequency in the recited range (column 3, lines 64-65) and a detector **43** for detecting radiation that is scattered by the sample **12** in a non-specular manner (column 4, lines 54-58) and which is positioned relative to the sample so as to “reduce” detection of specular radiation (column 5, lines 12-16).

With respect to dependent claim 17, the detector **43** in the apparatus of Cheo is positioned so as to detect substantially non-specular reflection (column 5, lines 17-25).

With respect to dependent claims 18-20, the emitter **18** and detector **43** in the apparatus of Cheo are positioned as recited (FIG. 1).

With respect to dependent claim 21, the apparatus of Cheo further comprises at least one additional detector **42** for detecting non-specular radiation scattered by the sample **12** (column 6, lines 44-50).

With respect to independent claim 25, Cheo discloses a method of investigating a sample **12** corresponding to the illustrated apparatus **10** (FIG. 1) which would comprise the steps of irradiating the sample with radiation **20** having at least one frequency in the recited range (column 3, lines 64-65) and detecting radiation that is scattered by the sample **12** using one or more detectors **42, 43**

positioned in a region out of the angular range to be expected for radiation to be reflected (or refracted under principles following Snell's Law) from the sample surface (column 5, lines 12-16).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheo (US004197457A) in view of Nuss (US005623145A).

With respect to dependent claim 12, although Cheo appears to disclose irradiating the sample **12** along a slice (compare FIGs. **1** and **2**), Nuss specifically teaches that the irradiation of a sample **4** (FIG. **4**) with radiation of a frequency in the recited range (column 2, lines 53-55) at a number of points on the surface thereof is known. In view of the acquisition of information regarding a region of the sample larger than the spot diameter (column 3, lines 43-51) it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Cheo to further comprise the step of irradiating the sample **12** at a number of points on the surface thereof such that more than a single slice is examined.

With respect to dependent claim 13, see the explanation of the rejection against claim 12. The raster scanning suggested by FIG. **4** of Nuss and the extended traverse of radiation **20** through the thickness of sample **12** in Cheo would result in the derivation of three dimensional distribution information characterizing the sample.

10. Claims 6-11, 15, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheo (US004197457A) in view of Arnone *et al.* (GB002385415A).

With respect to dependent claim 6, the analyzing in the method of Cheo can be presumed to obtain a time domain waveform from the radiation detected by detectors **42, 43**. Arnone *et al.* teaches that in the measurement of frequencies in ranges which overlap the range taught by Cheo (see, for example, pages 3 and 4 of Arnone *et al.*) analysis by obtaining a frequency spectrum from the time domain waveform and deriving information characterizing a sample from the frequency spectrum is known (page 6). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Cheo to include the additional step of analysis by plotting the amplitude of the detection radiation originally obtained in the time domain in the frequency domain since Arnone *et al.* treats the two domains as interchangeable.

With respect to dependent claim 7, Arnone *et al.* teaches that characterizing the sample graphically is known (page 6). It would have been obvious to one of ordinary skill in the art at the time the invention was made that the spectral plotting suggested by Arnone *et al.* would, in the method of Cheo which detects scattered radiation, be a graphic characterization in a scattering spectrum.

With respect to dependent claim 8, it would have been obvious to one of ordinary skill in the art at the time the invention was made to prepare an average scattering spectrum according to the suggestion of Arnone *et al.* to reduce dependence on variations between sample regions or between samples and the like.

With respect to dependent claim 9, the information derived in the method suggested by Cheo and Arnone *et al.* characterizes an internal structure (“voids, contaminants, and flaws”) of the sample **12**.

With respect to dependent claim 10, the information derived in the method suggested by Cheo and Arnone *et al.* can be presumed to characterize the granularity and/or density of the sample **12** in view of the identical steps and the different void sizes with different granularity.

With respect to dependent claim 11, the information derived in the method suggested by Cheo and Arnone *et al.* characterizes impurities or defects (“voids, contaminants, and flaws”) in the sample **12**.

With respect to dependent claim 15, the method of Cheo applies to finding defects **36** such as voids, contaminants, and flaws in “any far-infrared transparent media” (column 1, lines 9-13). Arnone *et al.* teaches that a pharmaceutical sample **49** is transparent (FIG. 2) to frequencies in ranges which overlap the range taught by Cheo (see, for example, pages 3 and 4 of Arnone *et al.*). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made that a pharmaceutical sample as suggested by Arnone *et al.* was a member of the class of any far-infrared transparent media taught by Cheo and to use the disclosed method to characterize pharmaceutical samples for voids, contaminants, and flaws.

With respect to dependent claim 22, to the extent understood, see the explanation of the rejection against claim 15. The use of the apparatus of Cheo to characterize a pharmaceutical sample would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the suggestion of Arnone *et al.* that a pharmaceutical sample is suitable for use as the sample **12** in the apparatus of Cheo.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Constantine Hannaher whose telephone number is (571) 272-2437. The examiner can normally be reached on Monday-Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Constantine Hannaher/
Primary Examiner, Art Unit 2884**